

## CPP GMR WITH IMPROVED SYNTHETIC FREE LAYER

### ABSTRACT

A magnetic head having an antiparallel (AP) pinned layer structure with at least two pinned layers having magnetic moments that are self-pinned antiparallel to each other. A free layer structure is spaced apart from the AP pinned layer structure, and includes a first free layer having a magnetic moment, a second free layer having a magnetic moment pinned antiparallel to the magnetic moment of the first free layer, and a third free layer having a magnetic moment pinned antiparallel to the magnetic moment of the second free layer.